

### **REMARKS**

Claims 1-2 are pending. Upon entry of the present amendment, new claims 3-12 are added. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) and under the judicially created doctrine of double patenting. Each of the rejections is addressed below.

#### **Support for the Amendments**

Support for the new claims is found throughout the specification and claims as originally filed. For example, support for new claim 3, which recites "0.5% liquid soap" is found at page 13, lines 5 and 6; support for new claim 4, which recites "an emulsifier," and support for new claim 5, which recites "0.2%, 0.4%, or 2%," is found, for example, at page 5, third paragraph, and at page 8, first paragraph; support for claim 6, which recites "an emulsifier and liquid soap" is found at page 13, lines 5 and 6; support for claim 7, which recites "mite mortality" is found, for example, at page 11, line 1; support for claim 8, which recites "reduces spore formation" is found at page 13, lines 10 and 11; support for new claim 9, which recites "treats powdery mildew already present on the crop" is found at page 13, lines 12 and 13; support for new claim 10, which recites "beta acids are present at about 1%-10%, is found, for example, at page 4, lines 11 and 12; support for new claim 11, which recites "the emulsion is stable when stored" is found, for example, at page 9, last paragraph, to page 10, line 1; support for new claim 12, which recites "the emulsion is stable when diluted" is found, for example, at page 9, last paragraph, to page 10, lines 1-3.

#### **Rejection under 35 U.S.C. 103(a)**

Claims 1 and 2, which are directed to methods of controlling spider mites or powdery mildew by applying an emulsion to an agricultural crop, are rejected under 35 U.S.C. 103(a) as allegedly obvious over Jones et al. (Pestic. Sci. 47:165-169, 1996; hereinafter "Jones") and Lösel et al. (Pestic. Sci. 48: 293-303, 1996; hereinafter "Lösel"), in view of Johnson et al. (UK Patent No. 2,330,076) (hereinafter "Johnson"). Applicants traverse. In support of the rejection, the Examiner asserts that it would be obvious for one of skill in the art provided with the cited references to

employ beta acids as pesticides. For the reasons discussed below, Applicants respectfully disagree and request withdrawal of the rejection.

To establish a *prima facie* case of obviousness, three criteria must be met. First, a suggestion or motivation to modify the reference or combine reference teachings must be present in the references or in the general knowledge present in the art. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations. M.P.E.P. 2143. The burden is on the Examiner to show that the references expressly or impliedly suggest all of the claim limitations. M.P.E.P. 2142. If this evidentiary burden is not met, the rejection under § 103 is improper and must be withdrawn.

There are a number of factors that distinguish the methods described by the cited references from Applicants' claimed methods. Foremost, none of the cited references teaches or suggests applying an emulsion of beta acids to an agricultural crop as recited in Applicants' claims. All of the cited references describe methods for making solutions of beta acids by solubilizing the beta acid fraction in ethanol prior to applying it to plants. In a "solution" the particles of a dissolved substance are uniformly dispersed at the molecular or ionic level (p. 1031, Condensed Chemical Dictionary, Exhibit A). In contrast, an "emulsion" is a stable colloidal mixture of two or more immiscible liquids held in suspension by an emulsifier (p. 440, Condensed Chemical Dictionary, Exhibit A). Neither Jones nor Lösel teaches or suggests making an emulsion comprising hop acids.

Jones and Lösel both dissolve hop extracts in ethanol to form an ethanolic solution prior to applying them to plants. Jones dissolves the beta acid fraction in ethanol prior to applying it to plants (Jones, p. 166, left column, fourth paragraph). Jones states that beta acids and colupulone were applied to leaf discs as "ethanolic solutions." Similarly, Lösel dissolves commercial hop resin in 500 ml of ethanol. Lösel states that the beta acids were prepared "as a solution of a commercial hop resin (100 g) in ethanol (500 ml) . . . ." (page 295, left column, first paragraph). Similarly in Johnson, "hop extract was made up as a solution in 50% ethanol" (page 4, line 27). Ethanolic solutions are distinct from emulsions.

As Johnson relates to the use of hop acids to control *Clostridium botulinum* and *Clostridium difficile* bacteria, it is questionable whether one of skill would even combine Johnson with Jones and/or Lösel. Nevertheless, it is stated in the Action that although neither Jones nor Lösel recite “soap,” Johnson is cited as showing soap (e.g., TWEEN 80). It is then asserted that the combination of Jones, Lösel, and Johnson render Applicants’ claimed subject matter obvious. Applicants disagree with this assertion.

Even *arguendo*, were one to combine the solutions of Jones or Lösel with Johnson, the resulting composition would not be Applicants’ claimed subject matter, i.e., emulsions of hop beta acids. The addition of Tween 80 to any of the ethanolic solutions of Jones, Lösel, or Johnson would not result in an emulsion composition. The resulting compositions would be solutions. Applicants submit that Jones, Lösel, and Johnson in combination fail to establish a *prima facie* case of obviousness and respectfully request withdrawal of the rejection.

#### **Double-patenting rejection**

Claims 1 and 2 are rejected under the judicially created doctrine of double patenting over claims 3, 10, 14, 15, 17, and 18 of copending Application No. 11/008,781. Applicants respectfully traverse the rejection. Applicants will address the provisional obviousness-type double patenting rejection upon a finding that the claims are in condition for allowance, but for the double patenting rejection.

Application No. 10/805,876  
Amendment dated April 26, 2007  
Reply to Office Action of January 24, 2007

Docket No.: 61842CIP(51035)

**CONCLUSION**

In view of the above amendment, Applicants believe the pending application is in condition for allowance. If a telephone conversation with Applicants' agent would help expedite the prosecution of the above-identified application, the Examiner is urged to call the undersigned agent at (617) 517-5580.

No fee is believed due for consideration of this response, however, the Director is hereby authorized to charge any credits or deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1105.

Dated: April 26, 2007

Respectfully submitted,

By 

Melissa Hunter-Ensor, Ph.D.

Registration No.: 55,289

EDWARDS ANGELL PALMER & DODGE  
LLP

P.O. Box 55874

Boston, Massachusetts 02205

(617) 439-4444

Attorneys/Agents For Applicant